Appendix 1 - Implementation Monitoring Report for the Period 1996-2004

Since the adoption of DNR Lynx Habitat Management Plan in November 1996 (WDNR 1996a), DNR's Northeast Region biologists, foresters, and managers have continued to work together to ensure that the Lynx Plan is faithfully applied to DNR-managed lands within the lynx's range. Implementation monitoring included three major components, as outlined in the 1996 Lynx Plan: 1) reporting of forest management activities, 2) field checks of a sample of management activities to verify reporting, and 3) updating of landscape-level (LAU) lynx habitat conditions. This Appendix describes the results of implementation monitoring conducted from November 1, 1996 through June 30, 2004.

1. Implementation Planning

Planning activities associated with implementing the Lynx Plan occurred in six major areas: staff training, travel route identification, denning habitat identification, timber sale considerations, management changes for the Loomis State Forest, and negotiations regarding the "take avoidance" agreement with USFWS (USFWS letter dated 26 April 2002).

1.1 LYNX PLAN TRAINING

In January 1997, a training session was conducted to introduce DNR's northeast region staff to the guidelines contained in the plan. The goals of the training were to familiarize participants with the different categories of lynx habitat, to delineate where lynx range occurs and when the plan is to be applied, and to introduce and discuss how the guidelines in the plan should be implemented. Twenty-eight DNR foresters and region staff completed the training. In addition, four biologists from the WDFW (Region 1) attended. DNR foresters working on management activities within lynx range were asked to consult with the region wildlife biologist on all sales to ensure compliance with the lynx plan, and to complete denning habitat searches adjacent to sale areas. Summary checklists were revised in 2004 to assist DNR staff with future Lynx Plan implementation (Lynx habitat implementation list is presented in Appendix 6).

1.2 TRAVEL ROUTE IDENTIFICATION

Travel routes were reassessed in 2002 to accommodate changes in Lynx Analysis Unit (LAU) boundaries associated with the Washington Lynx Recovery Plan (Stinson 2001). Travel routes were identified from USGS quads and digitized into GIS (see Figures 6-10 in the 2006

Lynx Plan). For DNR planning staff and managers, travel routes are available as a GIS data layer residing in DNR corporate database. Travel route locations will be accessible to foresters for timber sale planning as a layer within the DNR State Uplands Viewing Tool in late 2006.

1.3 DENNING HABITAT IDENTIFICATION

On the Loomis State Forest, searches for Denning Habitat have been completed in all sections to meet the denning dispersion guideline of 2 sites per square mile (see also "field checks" below). Larger blocks of denning habitat have also been designated to fulfill the requirements of protecting 10 percent of each LAU as Denning Habitat (see LAU guideline #1 in Chapter 4 of the Lynx Plan). Some of this is within the Loomis Landscape Plan's late successional forest blocks (25 percent of the subalpine fir and Douglas fir zones) distributed across the forest. A map of designated Denning Habitat in the Loomis State Forest has been created (see Figure 14 in the 2006 Lynx Plan). and will be maintained as a corporate GIS data layer. The Denning Habitat layer will be subject to changes over time as a result of (1) improved forest inventory through field verification and (2) forest stand development.

Because little harvest activity has taken place in the Little Pend Oreille (LPO) block, searches for Denning Habitat have not been prioritized in the LPO. Thus, for most areas, the sites needed to meet the denning dispersal guideline have not been identified. However, a woody debris/potential den site checklist in the Lynx Monitoring Plan (WDNR 1997) was followed by contract crews during an extensive inventory of timber resources on LPO in the summer of 1997. Preliminary field verification to identify suitable Denning habitat in LPO occurred in the fall of 2004. The final denning designation for this area will be available in summer of 2006.

Lynx Denning Habitat locations will be accessible to foresters for timber sale planning as a layer within DNR's State Uplands Viewing Tool. For DNR planning staff and managers, Denning Habitat will be available as a GIS data layer residing in the DNR corporate data base.

1.4 HABITAT CONSIDERATIONS IN TIMBER SALES

Permanent travel routes have been identified and are incorporated into all timber sale boundaries. In addition, travel corridors are incorporated into sale design to allow movement of lynx throughout the sale area. Individual harvest units are evaluated for size, shape, and adjacency. Searches are also made of each sale area to ensure that the best Denning Habitat remains available to lynx. Every time a proposed sale enters a new section, the section is evaluated for potential Denning Habitat. Aerial photographs and inventory maps are inspected to locate the older stands (which are most likely to produce good Denning Habitat). Following this evaluation, actual field searches are conducted and the best Denning Habitat available in the section is designated as habitat. If the best Denning Habitat available is within a proposed timber harvest unit, the sale will be modified to retain the Denning Habitat.

1.5 LOOMIS STATE FOREST PLANNING ACTIVITIES

The Board of Natural Resources approved the transfer of 24,677 acres of the Loomis State Forest from the Common School trust to conservation status in January 2000. The parcels transferred into conservation status are managed under the laws covering NRCAs. DNR's management plan for this NRCA was developed in 2003 (WDNR 2003). The remaining 110,000 acres of the Loomis State Forest are managed under the Loomis State Forest Landscape Plan (WDNR 1996b). This plan is being updated to reflect the changes in watersheds and ownership. Watershed analyses were conducted in the South Fork Toats Coulee and Sinlahekin WAUs and will be completed in 2006.

1.6 NEGOTIATIONS WITH USFWS FOR "TAKE AVOIDANCE" LETTER

During negotiations with USFWS to acquire an Agreement Letter to avoid incidental take of lynx (2000-2002), DNR implemented interim measures that included 1) no addition of groomed or designated snowmobile trails or play areas, 2) no harvest of potential Denning Habitat during the lynx denning season, and 3) no pre-commercial thinning of high quality lynx Forage Habitat.

2. Forest Management Activities

Three types of forest management activities took place in the area covered by the Lynx Plan during the period 1996-2004 - timber sales, other silvicultural activities, and road construction and management.

2.1 TIMBER SALES

Timber sales occurring within Lynx Management Zones (LMZ) during the reporting period are detailed in TableA1.1 (for Loomis State Forest), Table A1.2 (for Little Pend Oreille block), and TableA1.3 (for other areas). Most reforestation efforts on these timber sales will be by hand planting, although some natural regeneration will also occur. Regeneration surveys will be conducted on all regeneration units approximately two years after harvest to ensure compliance with State Forest Practice standards. Following harvest, a complete forest inventory is planned at approximately two to six years for partial-cut units and 12 - 15 years for regeneration units as part of DNR's Forest Resource Inventory and Planning and Tracking systems.

2.2 OTHER SILVICULTURAL ACTIVITIES

Three types of silvicultural activities occurred in lynx habitat during the reporting period: pre-commercial thinning, planting and broadcast burning. Pre-commercial thinning was allowed under the Lynx Plan until DNR implemented its voluntary moratorium in April 2000, when lynx were federally listed. Two pre-commercial thinnings occurred on the Loomis State Forest in 1997 (Table A1.4). In 1999, four units totaling approximately 300 acres were pre-commercially thinned in Loomis. All stands were mapped as Travel habitat at the time. However, it is likely that they supported some level of hare use given their high tree densities. For example, the Crazy Cow unit was sampled in the fall prior to thinning and had relatively high pellet densities (15.4 pellets per plot). The thinning treatment was to "remove all surplus conifer trees more than two feet in height," reducing the tree density from 1200 trees per acre to 300 trees per acre. Cut trees were left on the ground. Over summer 1999, the rate of pellet accumulation on the site was the highest of 31 sites sampled on Loomis. Because the largest trees were retained, it was not surprising that treatment did not affect canopy cover (Wilcoxon signed rank (WSR) $Z=-0.92$, $p=0.36$). Horizontal cover above 1 m was affected (WSR $Z=-2.20$, $p=0.028$), decreasing almost 20 percent after treatment and becoming more variable (pre-thin mean=65.8 percent, 95 percent CI= 56.4-75.1 percent; post-thin mean=46.3 percent, 95 percent CI= 31.8-60.7 percent). As of 2002, there were still substantial numbers of hare pellets (9.2 pellets per plot), but rank had declined to fifth of the 31 study sites. DNR will continue to monitor this site.

In spring 1999, approximately 89 acres of harvested units on the Loomis were broadcast burned (Table A1.4). Burning is done to ensure that the sites reach their regeneration and forage habitat potential by reducing large amounts of slash that resulted from the lop-and-scatter process, stimulating the release of lodgepole pine seeds, releasing nutrients back onto the site, and improving the seedbed.

Table A1.1
Timber sales conducted within Lynx Range on the Loomis State Forest from November 1995 through June 2004

Timber Sale / LAU #	Date Sold	Status	Type of Harvest	Acres	Starting Habitat Category	Ending Habitat Category
Bugged Out *Central / #322*	11/95*	Complete 1997	Partial-cut (100-179 tpa) Partial-cut (11-99tpa)	148 59	Travel Travel	Non-Lynx Non-Lynx
Beetle juice *North / #302*	4/96*	Complete 1997	Partial-cut (11-99 tpa) Partial-cut (>180 tpa) Regeneration	43 300 210	Travel Travel Travel	Non-lynx Travel Non-lynx
W. Rabbit *Central / #322*	6/96*	Complete 1997	Partial-cut (11-99 tpa) Partial-cut (100-179 tpa) Partial-cut (>180 tpa) Regeneration	160 27 42 179	Travel Travel Travel Travel	Non-lynx Non-lynx Travel Non-lynx
Hope *South / #356*	5/96*	Complete 1997	Regeneration	63	Travel	Non-lynx
Lucky Foot *South / #356*	7/96	Complete 1997	Partial-cut (>180 tpa)	105	Travel	Travel
Chute *South / #356*	4/97*	Complete 1998	Partial-cut/ Regeneration Partial-cut (>180 tpa)	213 41	Travel Travel	Non-lynx Travel
Swamp Dog *South / #356*	1/98	Complete 1998	Partial-cut (11-99 tpa) Partial-cut (>180tpa) Regeneration	166 22 95	Travel Travel Travel	Non-lynx Travel Non-lynx
Big Rock *North / #302*	8/96*	Complete 1999	Partial-cut (0-99 tpa)1 Partial-cut (100-179 tpa) Partial-cut (>180 tpa)	362 123 75	Travel Travel Travel	Non-lynx Non-lynx Travel
Chow *Central / #322*	3/97*	Complete 1999	Partial-cut (0-99 tpa)1 Partial-cut (100-179 tpa) Partial-cut (>180 tpa)	307 87 65	Travel Travel Travel	Non-lynx Non-lynx Travel
Squeaky Clean *Central / #322*	12/97	Complete 1999	Partial-cut (0-99 tpa) Partial-cut (100-179 tpa) Partial-cut (>180 tpa)	173 132 10	Travel Travel Travel	Non-lynx Non-lynx Travel
Hilltop Basin *Central / #322*	10/99	Complete 1999	Partial-cut (0-99 tpa)	150	Travel	Non-lynx

tpa = trees per acre
*Forest practice application submitted prior to plan adoption

Table A1.1 – continued

Timber Sale / LAU #	Date Sold	Status	Type of Harvest	Acres	Starting Habitat Category	Ending Habitat Category
Wickiup *South / #356*	10/98	Complete 1999	Partial-cut (0-99 tpa) Partial-cut (>180)	3 536	Travel Travel	Non-lynx Travel
Crazy Beetle *North / #302*	7/96*	Complete 2000	Partial-cut/Regenerat. Partial-cut (>180 tpa)	203 100	Travel Travel	Non-lynx Travel
Padded Paws *South +Central*	9/98	Complete 2000	Partial-cut (11-99 tpa) Partial-cut (>180 tpa)	382 47	Travel Travel	Non-lynx Travel
Nine Lives *North / #302*	1/99	Complete 2000	Partial-cut (0-179 tpa) Partial-cut (>180)	284 83	Travel Travel	Non-lynx Travel
Cougar Fork *Central / #322*	8/99	Complete 2000	Partial-cut (0-179 tpa) Partial-cut (>180)	368 10	Travel Travel	Non-lynx Travel
48 Deg. 45Min. *Central / #322*	8/99	Complete 2000	Partial-cut (0-179 tpa) Partial-cut (>180)	332 40	Travel Travel	Non-lynx Travel
Timothy *South / #356*	9/97	Complete 2001	Partial-cut/ Regener. Partial-cut (>180 tpa)	368 84	Travel Travel	Non-lynx Travel
Top Dog *South / #356*	2/98	Complete 2001	Partial-cut (11-99 tpa) Partial-cut (100-179 tpa) Partial-cut (>180 tpa)	252 49 85	Travel Travel Travel	Non-lynx Non-lynx Travel
Monte Carlo *Central / #322*	3/01	Complete 2003	Partial-cut/Regeneration Partial-cut (>180 tpa)	183 86	Travel	Non-lynx Travel
Woodpile *South / #356*	2/01	Complete 2001	Partial-cut/Regeneration	166	Travel	Non-lynx
Tillman Mtn. *Central / #322*	2/01	Complete 2002	Partial-cut/Regen. Partial-cut (>180 tpa)	215 16	Travel	Non-lynx Travel
Bear Claw *Central / #322*	5/03	Complete 2004	Regeneration	336	Travel	Non-lynx
Chopaka *North / #302*	6/02	In progress 2004	Regeneration	330	Travel	Non-lynx
Chilson *South / #356*	6/02	In progress	Regeneration	262	Travel	Non-lynx
Cougar Mountain *South / #356*	06/04	No Activity	Regeneration	218	Travel	Non-lynx

tpa = trees per acre

*Forest practice application submitted prior to plan adoption

Table A1.2
Timber sales conducted within Lynx Range on the Little Pend Oreille Block from February 1995 through June 2004

Timber Sale / LAU #	Date Sold	Status	Type of Harvest	Acres	Starting Habitat Category	Ending Habitat Category
Sherry Divide *LAU 218 / 219*	2/95*	Harvested	Partial-cut	265	Travel	Mixed - Travel/Non-lynx
Sherry Basin *LAU # 219*	10/95*	Complete 1997	Partial-cut	700	Travel	Mixed - Travel/Non-lynx
Trading Post *LAU # 219*	9/97	Complete 2000	Partial-cut	188	Travel	Mixed - Travel/Non-lynx

*Forest practice application submitted prior to plan adoption

Table A1.3
Timber sales conducted within Lynx Range outside of the Loomis State Forest and LPO from November 1996 through June 2004

Timber Sale	Date Sold	Status	Type of Harvest	Acres	Starting Habitat Category	Ending Habitat Category
Hoppit Pole	5/97	Complete 1997	Pole Sale	26	Travel	Travel
Skookum Root Rot	4/00	Complete 2001	Partial-cut/ Shelterwood	159	Travel	Mixed - Travel/Non-lynx
Stinger	5/00	Complete 2002	Partial-cut/ Shelterwood	185	Travel	Non-lynx
Crick	1/00	Complete 2001	Partial-cut/ Regeneration	205	Travel	Non-lynx
Twin	6/01	Complete 2003	Partial-cut/ Regeneration	328	Travel	Non-lynx
Last Byers Pole	3/02	Complete 2003	Pole Sale	30[1]	Travel	Travel
North Baldy	5/02	Complete 2003	Regeneration	95	Travel	Non-lynx
Belshazzar Ridge	2/03	Complete 2004	Regeneration	125	Travel	Non-lynx
Long Alec	3/03	In-progress 2004	Regeneration	313	Travel	Non-lynx
Swan	10/03	In progress 2004	Regeneration	41	Travel	Non-lynx
Seco	6/03	In Progress 2004	Regeneration	213	Travel	Non-lynx
Pend Oreille Pole	05/04	No Activity	Pole	70	Non-lynx	Non-lynx

[1]Total sale area was 111 acres but only 30 were within a LAU

Table A1.4
Pre-commercial thinning and broadcast burning conducted in the Loomis State Forest and LPO from November 1996 through June 2004

Year	Type of Activity	Timber Sale	Unit/Details	Acres	Habitat Change
1997	broadcast burn	Keep Cool Bugkill	1 2 3 4	22 33 34 23	Non-lynx to non-lynx
1997	Pre-commercial thinning	3 Forks	Retained >360 tpa	134	Travel to travel
		East 9 Mile	Retained >360 tpa	343	Travel to travel
1998	broadcast burn	W. Rabbit	2 5 7 10	17 11 9 8	Non-lynx to non-lynx
		Beetlejuice	6 7 8	20 25 12	Non-lynx to non-lynx
		Scattered Bugs	1 2 3	6 11 6	Non-lynx to non-lynx
1999	Pre-commercial thinning	3 Bucks	900 - 1,100 to 303 tpa	120	Travel to travel
		Branch Creek	1,100 - 1,300 to 303 tpa	22	Travel to travel
		Chopaka 2	1,300 - 1,700 to 538 tpa	18	Travel to travel
		Crazy Cow	1,100 - 1,300 to 303 tpa	140	Travel to travel
	broadcast burn	Sherry Basin	1	80	Non-lynx to non-lynx
		Beetlejuice	9	39	Non-lynx to non-lynx
2000	broadcast burn	Swamp Dog	4	29	Non-lynx to non-lynx
2004	broadcast burn	Chopaka	1	38	Non-lynx to non-lynx

From November 1996 through June 2004, planting activities occurring within the DNR's lynx habitat included 2,056 acres on the Loomis State Forest, 461 acres on the LPO and 573 acres outside the two blocks. They are conducted to assure rapid regeneration and establishment of forage habitat (Table A1.5).

Table A1.5
Planting activities conducted from November 1996 through June 2004

Timber Sale	Location	Acres
Crazy Beetle Bug	Loomis (North LAU)	14
Bugged Out Bugkill	Loomis (Central LAU)	95
Cougar Fork	Loomis (Central LAU)	185
Padded Paws	Loomis (Central LAU)	56
Squeaky Clean	Loomis (Central LAU)	25
Swamp Dog	Loomis (Central LAU)	52
Top Dog	Loomis (Central LAU)	242
Hilltop Basin	Loomis (Central LAU)	69
Monte Carlo	Loomis (Central LAU)	118
Tillman Mountain	Loomis (Central LAU)	143
Timothy	Loomis (South LAU)	95
Woodpile	Loomis (South LAU)	53
Chow	Loomis (Central LAU)	95
Hare Again	Loomis (Central LAU)	128
Jumping Bugs	Loomis (Central LAU)	49
Keep Cool	Loomis (Central LAU)	196
Scattered Bug	Loomis (North LAU)	99
Nine Lives	Loomis (North LAU)	23
Beetlejuice	Loomis (North LAU)	217
W. Rabbit	Loomis (Central LAU)	202
Trading Post	Little Pend Oreille Block	178
Sherry Divide	Little Pend Oreille Block	268
Sherry Basin	Little Pend Oreille Block	15
Twin	other	328
Crick	other	245

2.3 ROAD CONSTRUCTION AND MANAGEMENT

DNR's road management plan for the Loomis Forest was re-evaluated in 1997 to more accurately reflect current status and future road building activities. Following on-the-ground field inspections of portions of the Loomis road system, it was determined that a significant portion of roads that were classified as "open" to public access were actually impassible to vehicles. Many of these roads were either blocked by tank-traps or boulders, or were overgrown. At the same time, other roads, which served little management function, were identified for potential closure. A review of the "potential" road system contained in the initial Loomis State Forest Landscape Plan (WDNR 1996b) also indicated that actual road building on the forest would be far less than anticipated. The Loomis Plan only indicated where road locations were best suited if every acre of the forest were to be harvested over the next 80-year cycle. Actual timber harvesting feasibility and other on-the-ground constraints were not considered. An estimate of potential road building and a cap on total road building was developed and incorporated into the plan for road management under the Loomis State Forest Landscape Plan (WDNR 1996b).

Road management in the Loomis State Forest has two planned phases. Phase 1, implemented in 1998, was to reclaim all roads that were not passable to meet state Forest Practice standards for abandoned roads. All roads that had potential for closure or abandonment were surveyed. The length of each road was measured with a hip chain, and data on the type of work needed to close the road were recorded. This included information such as timber condition behind the potential closure, drainage conditions, potential culvert removal, amount of brush and tree regeneration on the road, and other potential resource issues. Following the survey, a road abandonment plan and Forest Practice Application were submitted to the Forest Practices Division for approval. Miles of roads approved for abandonment and closed to state standards were 59 in 1998, 5.6 in 1999, 0.42 in 2001, and 0.94 in 2003. In Phase 2 of the road management plan, an additional 70 miles (approximate) of open roads will be abandoned. Revised road density estimates based on the road management plan and 1997 evaluation are provided in Table A1.6.

Table A1.6
Road densities by LAU in the Loomis State Forest estimated for 1997 and for the future.

LAU #	1997 Open Road Density and length in miles	1997 Total Road Density and length in miles	Future Open Road Density and length in miles	Future Total Road Density and length in miles
North	0.73 mi/mi^2 31.6 mi	1.38 mi/mi^2 59.9 mi	0.49 mi/mi^2 21.1 mi	1.99 mi/mi^2 86.0 mi
Central	1.35 mi/mi^2 71.4 mi	1.81 mi/mi^2 95.7 mi	1.06 mi/mi^2 56.0 mi	2.05 mi/mi^2 108.0 mi
South	1.27 mi/mi^2 61.3 mi	1.55 mi/mi^2 75.1 mi	0.90 mi/mi^2 43.5 mi	1.79 mi/mi^2 86.4 mi

Also in 1997, DNR entered into a joint cooperative road management agreement for the Loomis State Forest with WDFW (WDNR 1998). All new roads currently being constructed will be closed to public access (vehicle) and procedures for closure and enforcement responsibilities are identified in the interagency agreement. Any non-agency vehicle on official business behind locked gates will be required to have a special vehicle access permit. All others will not be permitted. To implement this procedure, a new lock system was implemented in 1998. Keys cannot be duplicated and are inventoried such that personnel must sign keys out before use.

New Forest Practice rules were adopted in early 2000 (WAC 222-24-010). These rules require road maintenance and abandonment plans to be completed by all large landowners. These are required for all WAUs regardless of the presence of endangered species. DNR has completed road maintenance and abandonment plans for the Loomis State Forest and LPO. These plans will be updated annually.

Table A1.7
Completed road construction and re-construction within lynx range

Year	Timber Sale	Miles of Road Construction	Miles of Road Re-construction
1997	Sherry Basin	2.36	0.57
	Lucky Foot	0.97	0.02
	W. Rabbit	2.41	1.22
	Hope	0.38	0
	Beetlejuice	2.79	3.21
	Bugged Out	2.08	0.13
1998	Crazy Beetle	3.52	2.09
	Big Rock	6.21	0.09
	Sherry Divide	1.07	0
	Chow	5.62	0.06
	Chute	4.05	0
	Squeaky Clean	2.12	4.69
	Swamp Dog	4.81	0
	Padded Paws	2.72	2.47
1999	Timothy	4.44	0
	Top Dog	4.67	0.91
	Wikiup	0.44	6.24
	Nine Lives	2.98	1.16
	Cougar Fork	2.24	1.20
	48deg. 45 min.	4.11	0
	Hilltop	2.72	2.20
2000	Trading Post	0.47	0.66
	Monte Carlo	2.66	0
	Skookum Root Rot	0.78	1.83

Table A1.7 – continued

Year	Timber Sale	Miles of Road Construction	Miles of Road Re-construction
2001	Woodpile	2.24	0.10
	Tillman	1.65	1.27
	Stinger (Arcadia)	2.30	0.42
	Crick (North Columbia)	0.39	2.88
	Last Byers Pole	0	3.33
	Twin (North Columbia)	0.72	1.15
	Chopaka	0	1.1
2002	Chilson	0.32	3.94
	Juniper	0.2	0
	North Baldy	0.62	0.63
	Long Alec	0.2	1.6
	Bear Claw	1.7	2.1
2003	Belshazzar Ridge	0	1.47
	Last Byers Pole	0	0.076

All road locations in DNR lynx habitat are reviewed and designed to minimize the amount of necessary construction. On Loomis, open road mileage is limited to no more than 1.5 miles per square mile and the total road mileage (open + restricted) to no more than 2.5 miles per square mile as a result of the Loomis lawsuit settlement agreement. Current plans for the forest are to maintain the open road density near 1 mile per square mile. In 1998, new gates were installed on the Rabbit Basin road and on the system that accesses the Chow timber sale area. The gate on the Sinlahekin road was replaced with a stronger version. Miles of new road construction and re-construction completed in conjunction with harvested timber sales since adoption of the plan are provided in Table A1.7.

In future implementation reports, construction of new roads will be counted towards the 15 percent conversion to Temporary non-lynx habitat and will be reported as the area converted, not only as a list of road mileage built.

3. Field Verification of the Lynx Plan Implementation at Stand Level

All timber sales within lynx range were visited by a DNR biologist and some were visited by WDFW staff. No departures from the Lynx Plan were noted by region biologists in the sales designed under the Lynx Plan, aside from travel corridor changes noted below. Although no major sales were harvested in 1997 that were implemented under the Lynx Plan, all sales met guidelines contained in the plan, with the exception of interim travel corridors being 300 feet in width versus 330 feet.

Some travel routes were altered during timber sale planning:

- In 1997, two portions of the permanent travel route network shown in the Lynx Plan were modified following field inspections to more accurately reflect features of the landscape where lynx would potentially travel. The first was in the southwestern quarter of T38N R24E. The travel route was moved from a mid-slope location to follow Chickadee creek and an adjoining tributary.

- In sections 13 and 18 of T38R23E and T38NR24E. The travel routes were modified to follow directly along the ridge to the South Fork of Toats Coulee creek and to fill in a gap in the travel route along the creek that was inadvertently left out. These modifications have been digitized into GIS and are currently in the Northeast region database.

- In 1998, one travel route in T38N R25E was modified to better coincide with features of the landscape. The travel routes, which lie NE and SW of Wickiup creek, were extended along the ridgelines to meet the travel route along Wickiup creek instead of cutting across section 31.

- In 2001, associated with the North Baldy 12 timber sale, a travel corridor along the southeastern edge of the sale area was extended for the length of the sale area to maintain east-west connectivity. The cover provided by the corridor will be especially critical considering the non-lynx habitat adjacent and south of the sale area. Although natural vegetation along the corridor may not always contain the required 180 trees per acre for travel cover given the insect mortality at this site, the sale will minimize cover losses through minimal disturbance to the corridor.

- Also in 2001, one of two parallel sets of travel corridors associated with the Belshazzar timber sale was removed. The retained north-south corridors followed true ridgelines whereas the east-west corridors were redundant.

Denning and late successional forest (LSF) habitat searches were conducted within all three Loomis LAU's during the summers of 1998-2000. The purpose of these searches was to identify the best available Denning Habitat within each section of the forest. Two denning habitat patches (minimum of 10 acres per section) have been designated for every section within lynx range on the Loomis, outside of the NRCA transfer area. In addition, a photo interpretation and ground-truthing exercise helped to identify larger blocks of potential Denning habitat for designation to reach the goal of 10 percent per LAU. Approximately 1,200 forest inventory plots were completed in 1998 within these areas. By 2000, 9,059 acres of Denning habitat were designated across Loomis. Although most of the Denning Habitat is also designated as Loomis State Forest (LSF), a few non-LSF patches were designated as denning depending on abundance of down wood and availability within a section. A few patches of LSF habitat that were not classified as Denning Habitat were also designated for protection. A total of 2,310 acres have been designated as small patches of LSF habitat.

Denning Habitat was preliminarily identified from DNR's forest inventory data for LPO in 2002 and field verified during the fall of 2004. Additional Denning Habitat will be designated to meet dispersal requirements in each section and to meet the 10 percent per LAU requirement. This data layer will be digitized and available in GIS by the fall of 2005.

Some temporary travel corridors between harvested units are managed to remove dead and dying lodgepole pine. Tree densities remaining in these "M-units" varies depending on species present and other environmental factors. The 1996 Lynx Plan specifies that at least 180 tpa (445 trees per ha) will be retained following harvest. Inventory plots were placed in M-units following harvest to ensure compliance with this guideline. A minimum of 5 plots or one plot for every 5 acres (whichever was greater) were randomly placed within each unit. All plots were 1/10 acre (37.28 feet or 12 m radius) in size. In 1999 and 2000, conifer trees 8 feet (2.4 m) tall and greater, deciduous trees >5 inches (12.7 cm) dbh, and dead conifers >5 inches (12.7 cm) dbh were counted separately. All of the Travel corridors surveyed exceeded the minimum 180 trees /acre requirement (Table A1.8) and thus remained in travel habitat status.

Table A1.8
Density of trees retained in managed travel corridors on the Loomis State Forest, by timber sale.

Year	Timber Sale/Unit	Size (ac)	Live Conifers/acre	Dead Conifers/acre	Deciduous Trees/acre	Total Trees/acre
1999	Chow Lodgepole: M-1	19	302	84	6 live	392
	M-2	8	246	52	2 live	300
	M-3	7	274	160	14 live, 4 dead	452
	M-4	3	228	72	none	300
	M-5	7	352	140	none	492
	M-7	11	160	106	14 live, 4 dead	284
	M-8	5	306	86	4 live, 2 dead	404
	Beetle Juice Bug Kill: M-1	71	336	30	none	366
	M-2	19	272	46	2 live	320
	M-3	10	472	98	84 live, 20 dead	674
	M-4	29	412	144	none	556
	Jumpin Bugs Lodgepole: M-1	11	204	84	14 live, 14 dead	316
	Squeaky Clean Lodgepole: M-1	6	178	86	none	264
	M-2	4	322	82	none	404
	Hare Again: M-1	7	440	54	none	494
	M-2	9	397	108	none	505
	Swamp Dog Lodgepole: M-1	22	852	138	none	990

Table A1.8 – continued

Year	Timber Sale/Unit	Size (ac)	Live Conifers/acre	Dead Conifers/acre	Deciduous Trees/acre	Total Trees/acre
1999 cont.	Scattered Bugs Bugkill: M-1	11	340	42	none	382
	M-2	8	544	58	none	602
	W. Rabbit Bugkill: M-1	3	412	144	none	556
	M-2	10	472	98	none	570
	M-3	7	660	106	none	766
	M-4	22	926	138	none	1064
	Chute Lodgepole: M-1	7	338	48	none	386
	M-2	34	442	122	none	564
2000	Nine Lives: M-1	27	260	56	none	316
	M-2	12	376	36	none	412
	M-3	3	270	56	none	326
	M-4	41	281	26	none	307
	Crazy Beetle: M-2	19	250	42	none	292
	M-4	10	882	470	none	1,352
	M-5	36	338	112	none	450
	Cougar Fork: M-1	21	236	38	none	280
	M-2	4	322	82	none	404
	Timothy Lodgepole: M-5	7	408	98	none	506
	M-8	3	344	64	2	410
	48 Degrees 45 Minutes: M-1	28	250	26	none	276

In 1999 and 2000, regeneration surveys were conducted in several old timber harvest units within Loomis to determine if the growth of young trees is sufficient for these areas to be reclassified from Temporary Non-Lynx Habitat to either Travel Habitat or Forage Habitat. Plots were only placed in units that were harvested at least 10 years prior to the survey. Plots were randomly distributed within a unit at a density of one plot for every 5 acres (2 ha). Within each 1/100th acre plot all live coniferous trees greater than 8 feet (2.5 m) in height were counted. All of the plots within a unit were averaged to get a total tree count per acre. Horizontal cover was measured using a four-quadrant cover board at 45 feet (15 m) from the plot center in the four cardinal directions. Cover values from the 3 - 6 feet (1 – 2 m) height interval on the cover board were used to determine percentage of horizontal cover, as specified in the Lynx Plan (Forage habitat definition) and assuming an average 3 feet (1 m) of snow depth. Overhead cover was determined at each

plot center using a densiometer. In 1999, all of the units sampled were found to meet either the minimum requirements for inclusion as lynx Travel Habitat (>180 tpa >8 feet or 445 trees/ha > 2.4 m) or the minimum horizontal cover requirement (>40 percent horizontal cover) to be included as lynx Forage Habitat (Table A1.9a). Of the units sampled in 2000, 1,286 out of 1,291 acres in two LAUs were determined to qualify as Forage Habitat (Table A1.9b.).

Table A1.9a
Results of the 1999 regeneration / lynx habitat surveys by Loomis LAU

LAU #	Unit No.	Unit Size (acres)	Location (Sec-Twn-Rng)	Year Harvested	Trees/Acre ≥8' tall	Horizontal Cover%	Overhead Cover%
North	1	3	3-39-24	1985	650	56	69
#302	2	10	1-39-24	1987	1,350	51	40
	3	20	1-39-24	1987	425	44	16
	4	20	25-40-24	1976	300	56	28
	5	120	11-39-24	1985	1,281	64	46
	6	4	1-39-24	1970	2,433	62	56
	7	3	12-39-24	1984	850	56	43
	Total	180					
Central	1	5	14-38-24	1986	1,150	74	61
#322	2	13	27-39-24	1988	960	83	76
	3	12	4-38-24	1984	1,575	84	52
	4	63	34-39-24	1985	913	67	21
	5	10	15-38-24	1986	1,267	78	60
	6	55	13-38-24	1984	579	41	82
	7	6	5-38-24	1986	1,800	84	55
	8	6	33-39-24	1988	1,067	60	58
	9	50	9-38-24	1986	825	56	47
	Total	220					
South #356	1	55	28-37-24	1989	218	37	43

Table A1.9b
Results of the 2000 regeneration/lynx habitat surveys by Loomis LAU

LAU #	Unit No.	Unit Size (acres)	Location (Sec-Twn-Rng)	Year Harvested	Trees/Acre ≥8' tall	Horizontal Cover%	Overhead Cover%
Central	1	46	2-38-24	1986	1,312	61	29
#322	2	50	25-38-24	1987	1,307	59	45
	3	5	3-38-24	1987	200	31	21
	4	50	25-38-24	1987	540	62	24
	5	200	3,10,11-38-24	1987	1,067	54	31
	6	300	22,23-38-24	1986/87	1,282	60	20
	Total	651					
South #356	1	640	25-37-24	1984	419	58	46

4. Results from Implementation Monitoring at the Landscape Level

Changes in the proportions of the major habitat categories for the period 1996-2004 were calculated for each LAU within the Loomis State Forest (Table A1.10). Habitat changes were calculated by subtracting all harvested acres in each habitat category from the totals established in 1996 Lynx Plan (WDNR 1996a, Appendix C). The greatest change between lynx and non-lynx habitat occurred in Loomis Central LAU (2,592 acres or 1050 ha of Travel to Temporary non-lynx) and the least change occurred in Loomis South LAU (110 acres or 45 ha). The number of acres of identified Forage Habitat and Denning Habitat increased for all LAUs but the LPO Block, where no field checks of Forage Habitat occurred. The total amount of Temporary Non-Lynx Habitat created from Forested Habitat for the period of November, 1996 through June 30, 2004 are: LAU North (9.1 percent), LAU Central (13.76 percent), and LAU South (5.46 percent).

Table A1.10
Changes in the landscape-level habitat conditions from 1996 to 2004 within the Loomis State Forest and the Little Pend Oreille Block.

	Open Area (acres)	Temporary Non-lynx (acres)	Forage (acres)	Travel (acres)	Denning (acres)
LAU North					
1996	3018	1956 (9%*)	52 (0%)	18218 (82%)	1906 (9%)
1997	3018	2494	52	17680	1906
1998	3018	2494	52	17680	1906
1999	3018	2799	232	17195	1906
2000	3018	3083	232	16330	2487
2001	3018	3083	232	16330	2487
2002	3018	3315	232	16098	2487
2003	3018	3315	232	16098	2487
2004	3018	3315 (15%*)	232 (1%)	16098 (73%)	2487 (11%)
Change for the period 1996-2004		**- 6%**	**+1%**	**- 9%**	**+ 2%**
LAU Central					
1996	2696	5172 (17%)	0	24994 (81%)	839 (3%)
1997	2696	6142	0	24024	839
1998	2696	6403	0	23763	839
1999	2696	7032	220	22914	839
2000	2696	7463	871	19539	3132
2001	2696	7764	871	19238	3132
2002	2696	7764	871	19238	3132
2003	2696	8100	871	18902	3132
2004	2696	8100 (26%)	871 (3%)	18902 (61%)	3132 (10%)
Change for the period 1996-2004		**+ 9%**	**+ 3%**	**- 20%**	**+ 7%**
LAU South					
1996	4300	3495 (13%)	504 (2%)	21493 (81%)	921 (3%)
1997	4300	3558	504	21430	921
1998	4300	3763	504	21225	921
1999	4300	3711	504	21277	921
2000	4300	3071	1144	18758	3440
2001	4300	3605	1144	18224	3440
2002	4300	3867	1144	17962	3440
2003	4300	3867	1144	17962	3440
6/30/2004	4300	4085 (16%)	1144 (4%)	17744 (67%)	3440 (13%)
Change for the period 1996-2004		**+ 3%**	**+ 2%**	**- 14 %**	**+ 10%**

* Percentage of the lynx habitat matrix' total area (Temporary non lynx + Travel + Forage +Denning habitat)

Table A1.10 – continued

LPO Block					
1996	469	2039 (13%)	381 (3%)	12158 (80%)	700 (5%)
1997	469	2492	381	11675	700
1998	469	2492	381	11675	700
1999	469	2492	381	11675	700
2000	469	2586	381	11581	700
2001	469	2586	381	10881	1400
2002	469	2586	381	10881	1400
2003	469	2586	381	10881	1400
2004	469	2586 (17%)	381 (3%)	10881 (70%)	1400 (10%)
Change for the period 1996-2004		**+ 4%**	**0%**	**- 10%**	**+ 5%**